

Straw-Person Design for System Monitoring (SYM) Subsystem, Distribute State Data (DSD) State Data Request/Response

This straw-person design is an attempt to define the content of state data requests available from the SYM DSD process, and the content of the response from DSD. All comments and suggestions for improvement are welcome.

OVERVIEW

Clients have several options in what state data they will receive, and when this data will be sent. The state data is returned to receiving applications in packets. The format for these packets and the data they contain is referred to as the State Data Format (SDF). Available "states" include spacecraft telemetry states, spacecraft status (e.g. Day/Night, in/out of ZOE, etc.), space network states, and derived states (e.g. good/bad state for instruments, subsystems, etc.). All states will have a unique ID number.

STATE DATA REQUEST

A state data request consists of request specifications followed by a set of state IDs. A request may be for a one-time sample, or a subscription to receive ongoing updates until the subscription is canceled. If an application has already subscribed to a specific state, and then sends a new subscription request which contains that state, the new subscription for that state automatically replaces the existing one. The information encapsulated within a state data request is defined in table 1.

Table 1 - State Data Request

Item Name	Type	Description
Requestor ID	Enumerated Type	Identifier to establish destination of state data to be returned
Request Type	Enumerated Type	1) Every Nth sample - subscribe for sampled updates; if N = 1 then this becomes an "all points" request 2) Every N seconds - subscribe for timed updates 3) Changes Only - subscribe for changes only updates 4) One time only - return a single sample 5) Unsubscribe - remove subscription for specified states 6) Clear - cancel all pending subscriptions for the specified requestor 7) Subscription report - report all subscriptions in effect for the specified requestor.
Sample Rate	Integer	<ul style="list-style-type: none"> For Request Type 1, this is the # of samples For Request Type 2, this is the # of seconds For all other Request Types, this is not applicable
Number of States	Integer	Number of states in the request
State IDs	Array	List of State IDs for this request.

STATE DATA RESPONSE

A state data response consists of a header record containing an overall request status followed by state element records. Each state element record contains all of the information associated with that state. An API will be provided to isolate users of the data from format concerns. This API will contain all the necessary methods for extracting the data; requestors will be able to choose from different subsets of information. The information encapsulated within a state data response is defined in table 2.

Table 2 - State Data Response

Item Name	Type	Description
Request Status	Enumerated Type	<ul style="list-style-type: none"> Complete, no errors Incomplete (some data not available), No errors Error(s) occurred
Number of States	Integer	Number of states in the response
State Element Record		
State ID	Integer	Unique state ID number
State Data Status	Enumerated Type	<ul style="list-style-type: none"> Unknown State ID, no data provided Complete, no errors True State not available or unknown Error accessing True State Expected State not available or unknown Error accessing Expected State Compare Status not available or unknown Error accessing Compare Status
True State	Structure	<ul style="list-style-type: none"> Spacecraft Time True State Value - Raw True State Value - EU Flags (see FOF for bit descriptions) Data Source (see FOF for bit descriptions) Telemetry Format (see FOF for format codes) Delta Value
Expected State	Structure	<ul style="list-style-type: none"> Time Computed Expected State Value Expected State Format - Raw or EU Expected State Tolerance (will be 0 for discretes)
Compare Status	Structure	<ul style="list-style-type: none"> Time of last compare Result of last compare - TS = ES± Tolerance? Yes/No

Note: For derived states not sent as FEP telemetry, the True State Raw Value and Flags will not exist, and the Spacecraft Time slot will contain the time it was derived.

SUBSCRIPTION REPORT RESPONSE

A subscription report response consists of a header record containing an overall request status followed by state subscription records. Each state subscription record contains the subscription information for that state. An API will be provided to isolate users of the data from format concerns. This API will contain all the necessary methods for extracting the data; requestors will be able to choose from different subsets of information. The information encapsulated within a state data response is defined in table 3.

Table 3 - Subscription Report Response

Item Name	Type	Description
Request Status	Enumerated Type	<ul style="list-style-type: none"> Complete, no errors Error(s) occurred
Number of States	Integer	Number of states in the response
State Subscription Record		
State ID	Integer	Unique state ID number
State Subscription Type	Enumerated Type	<ol style="list-style-type: none"> Every Nth sample - sampled updates; if N = 1 then this is an "all points" subscription Every N seconds - timed updates Changes Only - changes only updates
Sample Rate	Integer	<ul style="list-style-type: none"> For Subscription Type 1, this is the # of samples For Subscription Type 2, this is the # of seconds For Subscription Type 3, this is not applicable

FEEDBACK

Please respond to me with any comments or suggestions by Monday, December 2, 1996.

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